

IT'S NOT JUST A BUMP ON HER FOREHEAD!



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A rare case of Pott's Puffy Tumor: frontal sinus osteomyelitis with sub-periosteal abscess

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Introduction

- Facial swelling is a commonly encountered complaint in the emergency department, with differential diagnoses ranging from benign soft-tissue swellings to life-threatening intracranial abscesses.⁽¹⁾
- It is important to determine which patients require further imaging and evaluation, and which patients are safe to be discharged.

History and Physical Examination

- **History** – An 11 year-old girl was brought to the ED with a progressive swelling on her forehead after bumping her head onto a wall 8 hours prior. The patient also was having a right sided, peri-orbital headache over two weeks, mild fever over the last four days, and vomiting over the last few hours.
- **ROS** - Denied loss of consciousness, vertigo, seizures, photophobia, blurry vision, cough or nasal congestion
- **Medical history** – unremarkable
- **Immunizations** – up to date
- **Vital signs** – Normal except for T101^o F
- **Physical examination** – A single 5x5 cm, roughly midline, circular, tender swelling without surrounding erythema on the patient's forehead. Bilateral maxillary tenderness. Neurologic and other systems normal.



Figure 1 – A case of Pott's Puffy Tumor in an 8-year old girl⁽²⁾

Investigations

- Total WBC count – 11,290/uL
- Differential count – neutrophilic leukocytosis
- ESR of 82 mm/hr
- CRP of 9.8 mg/dL



Figure 2 – Non-contrast CT of the head showing soft tissue swelling anterior to the glabella



Figure 3 – Non-contrast CT of the head showing frontal sinusitis



Figure 4 – Non-contrast CT of the head sagittal view of a 20 year-old female with Pott's Puffy Tumor showing frontal sinusitis, frontal osteomyelitis and sub-periosteal abscess⁽³⁾

Differential Diagnosis

- Cutaneous** – Cellulitis, infected dermoid or sebaceous cyst, carbuncle
- Subcutaneous** – Hematoma, orbital or peri-orbital cellulitis, unilateral non-Hodgkins lymphoma, lymphadenitis, inflammatory cutaneous tuberculosis
- Sub-galeal** – Subgaleal hemorrhage
- Sub-periosteal** – Pott's puffy tumor
- Osteal** – Sinusitis, osteomyelitis, tumors of the frontal sinus such as primary squamous cell or metastatic bronchogenic carcinoma

Treatment Plan and Outcome

- MRI showed right frontal sinusitis with associated osteomyelitis, epidural abscess, dural enhancement, and overlying subcutaneous abscess, with trans-osseous connections of the frontal sinus with the subcutaneous tissue and the epidural space.
- Functional endoscopic sinus surgery was performed for frontal sinus drainage
- IV Ceftriaxone and IV Metronidazole were administered for a period of six weeks through a PICC line
- Patient improved and the swelling was resolved

Discussion

- Pott's Puffy Tumor is a rare non-neoplastic sequelae of frontal sinusitis, complicated by acute osteomyelitis and subperiosteal abscess.⁽⁴⁾ This condition often presents with facial swelling.
- In the initial stages, this tumor is often misdiagnosed as hematoma or infected sebaceous cyst.⁽⁵⁾
- Delay in diagnosis could lead to serious intracranial complications such as epidural abscess, intracranial abscess, and pre-septal orbital cellulitis.⁽⁶⁾

Structural Anatomy

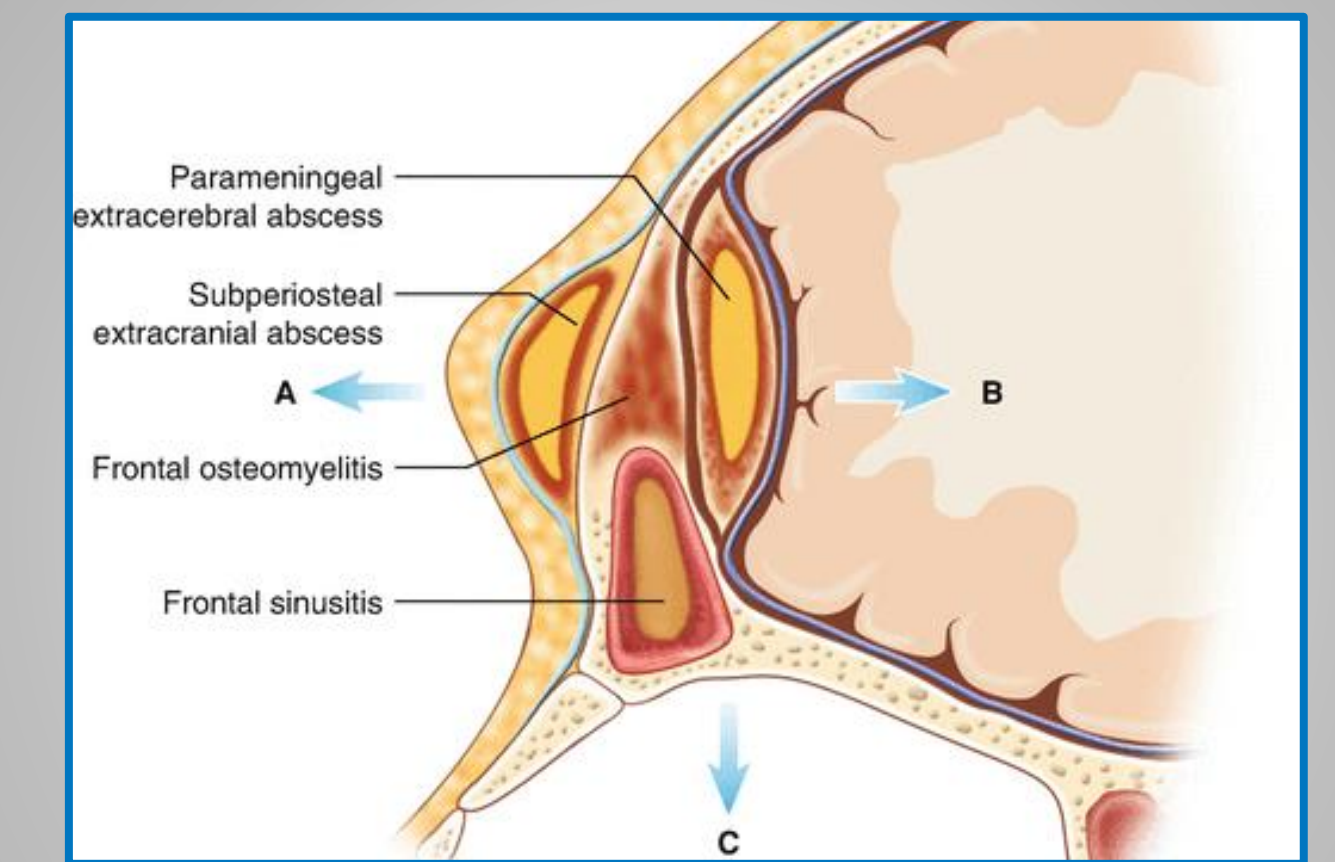


Figure 5 – Frontal sinusitis and the scope for extensions extracranially (A), intracranially (B) and intra-orbitally (C)⁽⁷⁾

Conclusion

- Pott's Puffy tumor is a potentially life-threatening complication of acute sinusitis and should be considered in patients presenting with facial swelling.
- Clues on evaluation that might suggest this diagnosis include frontal headache, midline frontal swelling, fever, and neurological abnormalities⁽⁸⁾.
- CT with contrast is the test of choice, and if a diagnosis of Pott's Puffy Tumor is made, admission, neurosurgery consultation, and urgent surgery is warranted⁽⁹⁾

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